



## SAMPLE MATERIAL

### Significant Tasks

New Haven School District, Connecticut

**Topic:** National Math Panel: Critical Foundations for Algebra

**Practice:** Comprehensive Instruction

Teachers in the New Haven school district have worked together over the past few years to develop significant tasks that engage students (often in groups) in substantive problems that require a variety of skills, including conceptual understanding, operations and basic fluency, and problem solving. Each significant task is developed to address one of the district's major mathematics units, is keyed to specific standards, and contains directions, necessary materials, and a scoring rubric along with an answer key.

This particular task example is designed to have students represent equivalent fractions, decimals, and percents, and to compare and order rational numbers displayed as fractions, decimals, and percents. The problem set-up is about planting a garden within particular parameters and then expressing the area taken up by particular vegetables in equivalent percents, fractions, decimals, and square feet. The task includes a table for students to complete. The rubric includes scoring criteria for accuracy of representation, accuracy of the entries in the equivalency table, collaboration in the working group, and clarity of presentation of information.

## ***Math Significant Task***

### **Grade 7 Significant Task # 1 Unit 1**

#### **Numerical and Proportional Reasoning, Part 1**

**Task :** To create and plan the layout of a vegetable garden based on given parameters.

**Introduction:** At the end of this significant task all students will be able to interchange fractions, decimals and percents, and compare and order rational numbers.

**Standards:** 2.1.1, 2.1.2

#### **Objectives:**

- Represent equivalent fractions, decimals, and percents
- Compare and order rational numbers displayed as decimals, fractions and percents

#### **Instructional Strategies:**

- Use of advance organizer
- Cooperative learning

**Materials:** Paper, plain and grid  
Drawing supplies  
Rulers  
Rubric  
Poster paper  
Handout – equivalency chart

**Protocol:** This significant task is to be completed in small groups.  
The rubric is used as an advance organizer to allow students to monitor their progress.  
Teacher should have students attach calculations to back of equivalency chart.

**Procedure:**

**Day 1** Teacher will distribute and explain the task description, rubric and equivalency chart. Teacher will assign or allow students to choose groups of no more than four. Students will organize into their groups and begin planning their gardens by starting to fill in equivalency chart.

**Day 2** Students will complete equivalency chart and attach computations to back. They will sketch their garden on scrap paper.

**Day 3** Students will check all work for accuracy and draw their garden design onto chart paper prepared to be displayed.

## Design Your Garden - Task Description

Your group has been given a 20 foot by 20 foot plot of land in which to plant a vegetable garden. Your task is to design and draw your garden using the given parameters and complete an equivalency chart. In your drawing, you must have a key to show which vegetables are grown in each area. The key must show the vegetables in order, from greatest to least.

### Garden parameters:

1. You must plant eight different vegetables: tomatoes, carrots, green beans, zucchini, cucumbers, lettuce, radishes, and parsley.
2. Tomatoes are popular, and you should plan to use at least 25% of your garden for them.
3. You need to dedicate at least 0.1 of your garden for carrots.
4. No more than one seventh of your garden should be for green beans.
5. Plant no more than 50 square feet of zucchini.
6. Use at least 5% of your space for cucumbers.
7. Lettuce plants are large, so use at least one sixth of your garden for lettuce.
8. Radishes and parsley are both small, and together should take up no more than 0.15 of your space.

## Design Your Garden - Equivalency Chart

After you have planned how to allocate the space in your garden, complete the chart below.

Decimal can be rounded to the nearest hundredth.

Percentages should be rounded to the nearest tenth.

Square footage should be rounded to the nearest whole number.

Fractions need to be written in simplest form.

Attach your computation work to the back of this page.

	Tomatoes	Carrots	Green Beans	Zucchini	Cucumbers	Lettuce	Radishes	Parsley
Percent								
Fraction								
Decimal								
Square Feet								

## Design Your Garden - Rubric

	4	3	2	1
<b>Garden Display (accuracy)</b>	Drawing precisely reflects proportions allotted. Key is ordered correctly greatest to least	Drawing is nearly or completely precise. Key may have a few mistakes, but is generally correct.	Drawing is reasonably correct (no gross errors). Key is present, but may not be ordered correctly.	Drawing does not reflect proportions allotted. Key is non-existent.
<b>Equivalency Chart</b>	All columns are equivalent to the specifications given. Computations are complete and accurate.	Only minor mistakes within column, not necessarily rounded to specifications. Computations complete but may contain some errors.	Several mistakes on chart, but no more than 25% incorrect. Computations may be inaccurate or incomplete.	Significant errors or blanks within columns. Computations are inaccurate and/or incomplete.
<b>Collaboration</b>	Worked with group collaboratively to solve problems all the time.	Worked with group collaboratively to solve problems most of the time.	Worked with group collaboratively to solve problems some of the time.	Did not work with group collaboratively to solve problems.
<b>Presentation (overall neatness)</b>	All work is organized, neat and visually appealing. Writing is very legibly written or typed.	Most work is organized, neat and visually appealing. Writing is legibly written or typed.	Some work is organized, neat and/or visually appealing. Writing is legible.	Work is not organized, neat and visually appealing. Writing is barely legible.

**Comments:**

**Total:**

## Answer Key for Equivalency Chart

	Tomatoes	Carrots	Green Beans	Zucchini	Cucumbers	Lettuce	Radishes	Parsley
Percent	25% or more	10% or more	Up to 14.3%	Up to 12.5%	5% or more	16.7% or more	With parsley,	up to 15%
Fraction	$\frac{1}{4}$ or more	$\frac{1}{10}$ or more	Up to $\frac{1}{7}$	Up to $\frac{1}{8}$	$\frac{1}{20}$ or more	$\frac{1}{6}$ or more	With parsley,	up to $\frac{3}{20}$
Decimal	0.25 or more	0.1 or more	Up to 0.143	Up to 0.125	0.05 or more	0.167 or more	With parsley,	up to 0.15
Square footage	100 or more	40 or more	Up to 57	Up to 50	20 or more	67 or more	With parsley,	Up to 62

## Answer Key for Drawing Key

Student answers may vary.

Possible solution: Tomatoes, Lettuce, Green Beans, Zucchini, Carrots, Radishes, Parsley, Cucumbers.

Variations from this list may be correct if the variations reflect the numbers given on the students' chart.